

Formative assessment processes in Basic Education. A Systematic review

Procesos de evaluación formativa en Educación Básica. Una revisión sistemática

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Abstract

The growing interest in formative assessment requires a systematic analysis of the key elements of the research developed in recent years. Existing literature reviews focus on the factors influencing formative assessment but do not deal with the perceived benefits used or the strategies employed. Thus, this review aims to answer the following questions: (i) What are the benefits perceived by elementary school teachers regarding the use of formative assessment in classroom practice?; (ii) What are the factors that influence teachers' intentions to use formative assessment processes in the classroom?; (iii) What are the most frequently used formative assessment strategies in the classroom by the teachers and how are they used? A systematic review of the last five years was carried out in WOS, SCOPUS, ERIC and Psychinfo following the PRISMA statement. After applying the inclusion criteria, 36 studies were analyzed. The results show that teachers perceive the benefits of assessment processes associated with 10 variables related to process improvement, learning regulation or teaching improvement. Moreover, the factors that influence their intention to apply them are personal, interaction with others and contextual facts. Finally, the most used strategies are providing feedback, involving students in the evaluation, sharing evaluation objectives and criteria, and asking questions. Therefore, this study contributes to systematizing the research carried out concerning formative assessment processes, opening a door to the generation of new lines of research and the application of concrete actions in educational practice.

Key words: formative assessment; elementary education; teachers; benefits; strategies

Resumen

El creciente interés en la evaluación formativa requiere un análisis sistemático de los elementos claves de la investigación desarrollada en los últimos años. Los trabajos de revisión existentes se enfocan en los factores que afectan a la evaluación formativa pero no abordan los beneficios percibidos utilizados ni las estrategias empleadas. Por ello, esta revisión busca responder las siguientes preguntas: (i) ¿Qué beneficios percibe el profesorado de Educación Básica sobre el empleo de la evaluación formativa en la práctica del aula?; (ii) ¿Cuáles son los factores que influyen en las intenciones del profesorado para utilizar procesos de evaluación formativa en el aula?; (iii) ¿Cuáles son las estrategias de evaluación

formativa más empleadas en el aula por parte del profesorado y cómo se emplean? Se realizó una revisión sistemática de los últimos cinco años en WOS, SCOPUS, ERIC y Psychinfo siguiendo la declaración PRISMA. Tras la aplicación de los criterios de inclusión, 36 estudios fueron analizados. Los resultados muestran que el profesorado percibe beneficios de los procesos de evaluación asociados a 10 variables relacionadas con la mejora del proceso, la regulación del aprendizaje o la mejora de la enseñanza. Por otra parte, los factores que influyen en su intención de aplicación son de carácter personal, de interacción con los demás y contextuales. Finalmente, las estrategias más empleadas son proporcionar feedback, implicar al alumnado en la evaluación, compartir los objetivos y criterios de evaluación. Por tanto, este estudio contribuye a sistematizar las investigaciones realizadas en relación con los procesos de evaluación formativa, abriendo una puerta a la generación de nuevas líneas de investigación y a la aplicación de acciones concretas en la práctica educativa.

Palabras clave: evaluación formativa; educación básica; profesorado; beneficios; estrategias

Introduction

Assessment is one of the most controversial aspects of educational processes (Bilbao-Martínez & Villa-Sánchez, 2019). Its social function aimed solely to hold students accountable for their performance. This has been the focus of assessment for a long time. However, for decades, research has shown that assessment can have immense pedagogical potential, improving teaching and learning processes (Bizarro et al., 2019). Formative assessment emerges as a process that aims to constantly improve this process. Specifically, it is a type of assessment that is integrated in the teaching and learning process, which encourages, among other things, a higher degree of learning acquisition by the students, the regulation and self-regulation of learning, student autonomy and the improvement of the teaching work, thus optimizing the teaching and learning processes (Azpilicueta-Amorín, 2020; Hamodi et al., 2015; MacDonald, 2022; Ramírez et al., 2018). However, despite the growing research on the subject, there are no studies that systematically review teachers' perceptions of the benefits that the implementation of these processes may have in classroom practice. This hinders the ability to reasonably justify why the development of formative assessment practices should be encouraged in Basic Education (Primary and Secondary Education). Furthermore, understanding the research topics developed around the benefits of these processes will contribute to the emergence of new research proposals on elements that have not yet been addressed.

In addition, the application of these processes in the classroom is limited and, in many cases, traditional forms of assessment are still in use (Talaquer, 2015). This raises the question: What factors influence the use of these processes? The systematic reviews by Heitink et al. (2016), Schildkamp et al. (2020), and Yan et al. (2021) identify two types of influencing factors: personal factors and contextual factors. The former is linked to teachers' pedagogical beliefs and their perceived literacy in employing effective formative assessment strategies. The latter relates to both external and internal educational policies, the work environment where teachers carry out their duties, working conditions, and students' skills and abilities for the effective development of assessment. These reviews cover studies conducted prior to October 2019, analyze the perceptions of teachers from different educational levels, including higher education, and do not consider factors related to the relationships and interactions that arise within the school background (teachers and students) and their potential impact on the use of formative assessment. It is essential to have updated information to identify the aspects that need to be emphasized in order to promote the development of formative assessment in the school context and, from there, to develop actions that help reduce the gap between theory and practice.

Another key point is the strategies used by teachers when applying formative assessment processes. The literature identifies five key strategies for developing formative assessment (William & Leahy, 2015): (i) sharing objectives and assessment criteria with students; (ii) encouraging ques-

tions and discussions in class; (iii) providing feedback that allows students to review and improve their work; (iv) involving students in their learning; and (v) involving students in the learning of their peers. However, to what extent do teachers use these strategies? On what aspects do they focus on within each of these strategies when applying formative assessment processes? In relation to these questions, it seems necessary to systematically analyze which formative assessment strategies teachers report using when implementing these processes. In this way, conclusions can be drawn about which strategies may be most relevant for introducing teachers to these processes, and which should be emphasized more in both initial and ongoing training, as well as identifying which aspects remain unexplored in research.

For these reasons, we believe there is a gap in the literature, and specifically a lack of systematic reviews that provide a methodical understanding of the benefits perceived by teachers from the application of formative assessment processes, the factors influencing teachers' use of these processes, and the way formative assessment strategies are applied. Thus, this review seeks to answer the following research questions:

Q1: What benefits do Basic Education teachers perceive from the use of formative assessment in classroom practice?

Q2: What factors influence teachers' intentions to use formative assessment processes in the classroom?

Q3: What are the most used formative assessment strategies in the classroom by teachers, and how are they applied?

Method

A systematic review of the literature of the last five years was carried out following the guidelines established in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement (Page et al., 2021) for this type of studies.

Search Process

For the research, the search terms were defined based on the research questions and following the PICO strategy (Costa-Santos et al., 2007), considering the population and the intervention. Key terms and their synonyms were used to access a wide variety of studies. After consulting the specialized literature, the terms listed in Table 1 were used.

The search was conducted in four databases: Web of Science, Scopus, Education Resources Information Center (ERIC), and PsychINFO. In Web of Science and Scopus, the search was conducted using the interfaces provided by the databases themselves, while in ERIC and PsychINFO, the EbescoHost platform was used. An independent search was performed in each database using the same filters and strategy. To initiate the search, a Boolean equation was formulated using the AND and OR connectors (Table 1). Only articles related to the fields of education, social sciences, psychology, and humanities published in the last five years were included. All publications were exported to the reference management software Refworks.

TABLE I. Research questions and keywords

Research questions	Q1: What benefits do Basic Education teachers perceive from the use of formative assessment in classroom practice? Q2: What factors influence teachers' intentions to use formative assessment processes in the classroom? Q3: What are the most used formative assessment strategies in the classroom by teachers, and how are they applied?	
PICO	[1]Population	[2]Intervention
Keywords	<i>primary education*</i> <i>primary school*</i> <i>elementary education*</i> <i>formal education*</i> <i>secondary school</i>	<i>formative assessment*</i> <i>formative evaluation *</i> <i>alternative assessment*</i> <i>assessment for learning</i>
Search	([1] *OR) AND ([2] *OR)	

Source: Compiled by the author.

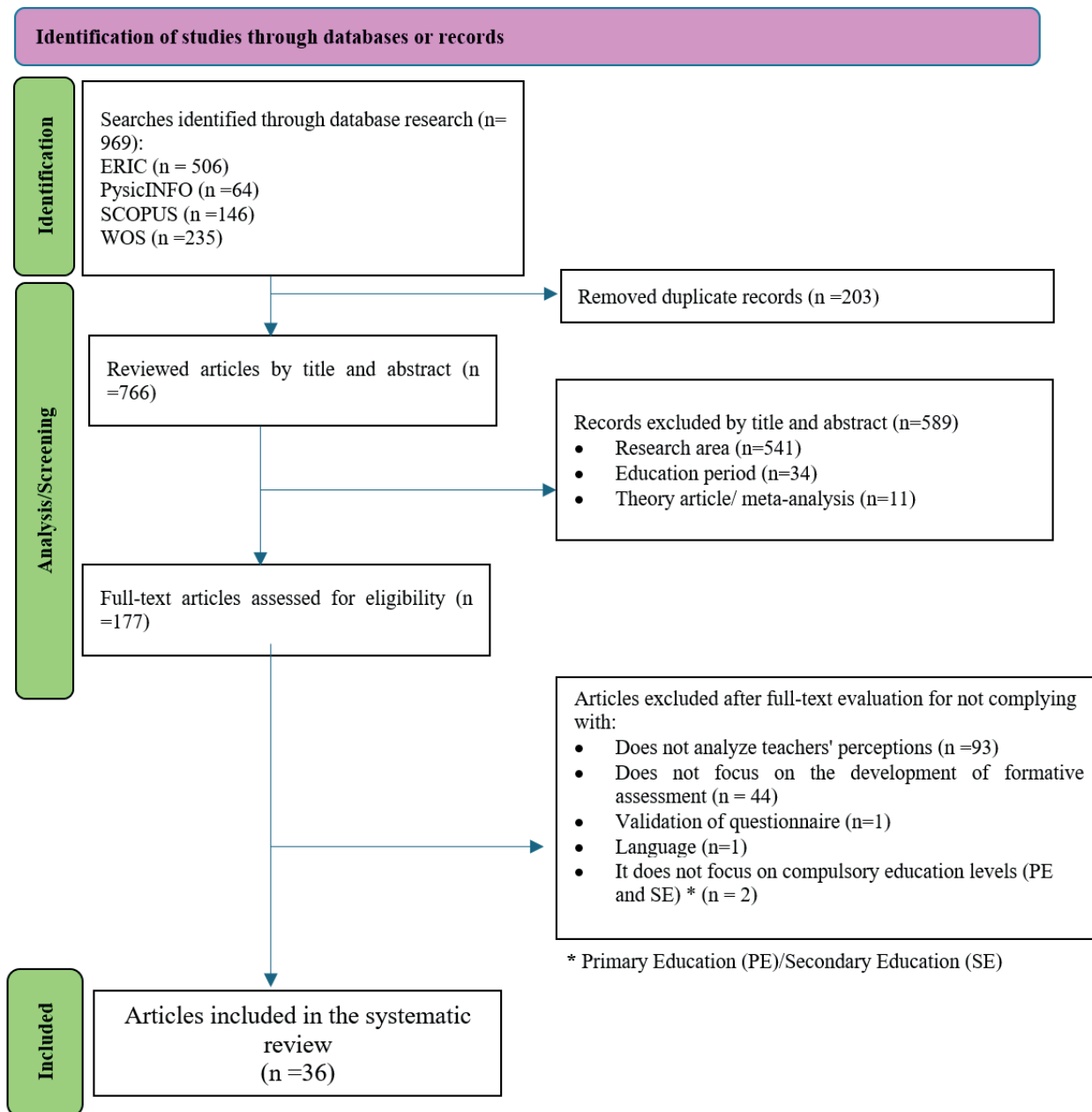
According to the research questions proposed, the following inclusion criteria were established for the selection of articles:

- Studies analyzing teachers' perceptions of the benefits of formative assessment or studies investigating factors influencing teachers' intentions for developing formative assessment or research analyzing the use of formative assessment strategies in the classroom.
- Studies that present empirical results (excluding theoretical work, instrument validation, meta-analyses, or systematic reviews).
- Peer-reviewed articles.
- Articles written in English.
- Studies published between January 2018 and March 2023.

Article Selection and Data Extraction

The final selection of studies followed several stages (Figure 1). The initial search yielded 969 articles across the four databases. After removing duplicates (n=203), 766 publications remained for review. The titles and abstracts of these were analyzed, excluding those that did not meet the inclusion criteria (n=589). Of the 177 studies that remained for full-text analysis, 141 were excluded for not meeting one or more of the established inclusion criteria (see exclusion reasons in Figure 1). Finally, 36 studies were included in the systematic review.

Figure I. Flowchart of the study selection procedure according to PRISMA statement



Source: Compiled by the authors

Data Analysis

To analyze the information from the selected publications, the full texts were read, and the results were recorded using two data extraction templates. The first template captured the characteristics of the studies analyzed through the following categories: (i) title; (ii) authors and publication year; (iii) research methodology and data collection procedures; and (iv) number of participants in the study. The second template was used to analyze the results and conclusions of the selected studies, including aspects related to the research questions. These criteria were employed to assess the internal quality

of the selected studies and to respond to The Critical Appraisal Instrument for Systematic Reviews to evaluate the suitability of the studies for the review. The PRISMA guidelines were used to assess the quality of this review, and registration was included in PROSPERO. Additionally, the AMSTAR2 critical appraisal tool was used, obtaining an overall moderate confidence rating.

Results

Descriptive Analysis of the Literature

The data extraction template detailing the characteristics of the studies included in the systematic review is presented in Appendix I. A summary of the most relevant information from this template is provided in Table 2. Most of the analyzed studies utilized a qualitative methodology (55.3%), followed by mixed methods (24.8%) and quantitative methods (19.4%). Most qualitative or mixed-method studies employed phenomenological or ethnographic designs. The three most common data collection methods were interviews (18%), questionnaires (22.5%), and classroom observations (25.7%).

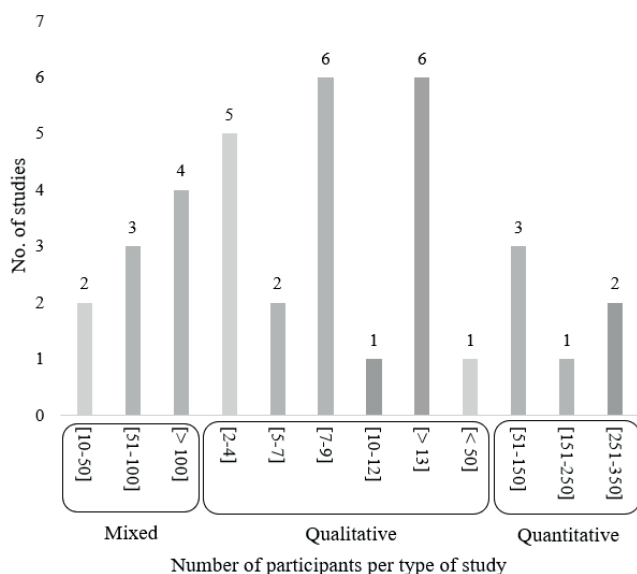
Of the selected studies, 47.2% were conducted in the Secondary Education level, 33.3% in Primary Education, and 13.8% involved teachers from both educational levels. The geographic distribution of the studies is broad, with most of the research located in Asia (41.6%), followed by Africa (22.2%) and Europe (16.6%). Regarding the subject or educational area taught by the teachers, 30.5% of the studies gathered data from teachers across various disciplines, another 30.5% from teachers of Math's and English, and 2.7% from studies investigating science-related disciplines (such as Science, Chemistry, and STEAM). The number of participants ranged from 2 to 47 in qualitative studies and from 50 to 330 in quantitative studies (see Figure I).

Table II. Descriptive information of the data analyzed

Analyzed variable		N Studies	%	
Methodology	Qualitative	Observation and interview	14	38.8
		Interview	5	13.8
		Intervention and interview	1	2.7
	Quantitative	Questionnaire	7	19.4
		Mixed	Observation and questionnaire	1
	Interview and questionnaire		5	13.8
Observation, interview and questionnaire	3		8.3	
Education level	Primary Education	12	33.3	
	Secondary Education	17	47.2	
	Primary Education and Secondary Education	5	13.8	
Continent	Asia	15	41.6	
	Africa	8	22.2	
	Europe	6	16.6	
	America (USA and Canada)	5	13.8	
	Australia	1	2.7	
Knowledge fields	Different subjects	11	30.5	
	Math	11	30.5	
	English	11	30.5	
	Science	1	2.7	
	Chemistry	1	2.7	
	STEAM	1	2.7	

Source: Compiled by the authors

Figure I. No. of participants by type of study



Source: Compiled by the authors

The results were organized according to the three research questions: (i) Perceived benefits of formative assessment in classroom practice for Basic Education Teachers; (ii) Factors influencing

teachers’ intentions to use formative assessment processes in the classroom practice, and (iii) Formative assessment strategies most commonly used in the classroom by Basic Education teachers and how they are used.

Table III. Register of analyzed studies Source: Compiled by the authors

		Variables	No. of study analyzed (Check Annex I for list of studies)	N	
Benefits of formative assessment		Improvement of the teaching and learning process	5,6,23,31	4	
		Integrated in the teaching and learning process	16,24, 36,	3	
		Respond to student needs	3,16,21,23,31	5	
		Value the students' performance	1,7,8,13,14,19,21,22,24,26,36	11	
		Identify needs and challenges	10, 19,21,36	4	
		Provide feedback	16,23, 33	3	
		Promote learners self-regulation	7,10,13,21,22,24,25,26	8	
		Redesigning teaching	6,19,24	3	
		Collect performance evidence	5, 7, 10,13,16,24	6	
		Report summative achievements and establish marks	6,10,13,16,19,21,22,23	8	
Factores influyentes en el desarrollo de la evaluación formativa	Personal issues	Personal engagement and motivation	1,2,3,7,14,18,19,20,25	9	
		Perceived self-efficacy	10, 14, 16, 28,35,36	6	
		Knowledge and skills	9,11,14,17,30,34,36	7	
		Education-training	3,7,9,10,14,20,27,30,36	9	
	Interaction	Poor teacher engagement	3,5,20,23,27,29,32,36	8	
		Negative attitudes of students	9,15,26,27,30,34	6	
	Background issues	External policies	Curriculum	8,9,10,11,30,36	6
			National tests	5	1
			Test System/ Summative Exams	1,7,16,31,24,25,26,27,30,32,33,35	12
		School policy	Direction Support	3,9,10,14,17,20,35,36	8
Study Program			1,9,10,17,20,21,30,33,34,36	10	
Lack of teacher autonomy			20	1	
Working terms		Lack of time	Overloaded workload	3,4,5,7,9,10,14,20,24,26,27,29,30,32,35,36	16
			Administrative tasks	20	1
	High ratios	Teaching assignments	5,9,10,20,36	5	
		Student diversity	3,7,9,27,36	5	
Formative assessment strategies		Sharing learning objectives and learning standards	24,34	2	
		Ask questions	3,4,6,8,9,10,11,12,15,17,26,29,30,32,33	15	
		Provide Feedback	4,8, 9,10,11,29,33,36	8	
		Involvement of different educational agents	3,5,6,8,9,10,13,15,17,18,21,22,29,30,32,33,36	17	
			3,5,6,8,12,17,18,21,25,26,27,29,31,33,34,36	16	

Source: Compiled by the authors

What benefits do Basic Education teachers perceive about the use of formative assessment in classroom practice?

Nineteen studies identified teachers’ perceptions of the benefits of implementing formative assessment in the classroom. In most of these studies, the participating teachers perceive formative assessment as a tool for enhancing the teaching-learning process (Boström & Palm, 2019; Dayal, 2021; Mahalambi et al., 2022; Thaçi & Sopi, 2022). Three studies highlighted the value of formative as-

assessment as an integrated element within the teaching-learning process (Kaur, 2021; Martin et al., 2021; Zeng & Huang, 2021). Additionally, two studies indicated that teachers agree on the benefits of formative assessment for developing a student-centred constructivist approach, as it allows the collection of meaningful information about students' learning to respond to their needs (Dayal, 2021; Namoco & Zaharudin, 2021).

In line with this, teachers in eleven other studies view formative assessment as a tool to assess student performance, thereby supporting their holistic development (Hasim et al., 2018; Mahlambi, 2021; Taçhi & Sopi, 2022; Zeng & Huang, 2021). Studies by Ma (2021), Martin et al. (2022) and Zeng and Huang (2021) emphasize the importance of providing feedback on task performance and on the instruction that has taken place in their classrooms to guide and encourage their students in their learning process. The diagnostic function of assessment is also noted to identify students' needs and difficulties, enabling teachers to adapt their instructional practices (Govender, 2020; Kyaruzi et al., 2018; Ma & Bui, 2021; Zeng & Huang, 2021). Another aspect explored is the self-regulation of learning as a benefit of using formative assessment processes, particularly when students are involved in the assessment (Demir et al., 2018; Govender, 2020; Hasim et al., 2018; Ma & Bui, 2021; Mahalambi, 2021; Martin et al., 2022; Namoco & Zaharudin, 2021; Ng et al., 2020). Moreover, four studies highlight the regulatory function of assessment as a means of obtaining evidence on what works or does not work in practice, allowing for the adjustment of teaching methods (Zeng & Huang, 2021).

Lastly, despite a paradigm shift being observed in the conception of assessment, there is still a significant influence of traditional certification-focused practices. Six of the studies highlight the role of assessment in gathering evidence of students' academic performance, measuring the grade of learning and verifying their level of competence in the tasks performed. (Boström & Palm, 2019; Demir et al., 2019; Govender, 2020; Hasim et al., 2018; Kaur, 2021; Martin et al., 2022). Eight of the studies also emphasize assessment with a qualifying purpose, highlighting its summative nature (Dayal, 2021; Govender, 2020; Hasim et al., 2018; Kaur, 2021; Kyaruzi et al., 2018; Ma & Bui, 2021; Mahalambi, 2021; Mahalambi et al., 2022). In some of these studies, teachers view formative assessment as a tool for comparing marks from previous years with those of subsequent years (Kaur, 2021) or as small tests carried out throughout the process that allows the qualification at the end of the learning process (Dayal, 2021; Kaur, 2021). This perception of assessment leads to confusion among teachers in some studies when trying to understand formative assessment (Kaur, 2021; Mahalambi, 2021; Zeng & Huang, 2021).

What are the factors that influence teachers' intentions to use formative assessment processes in the classroom?

Out of the 36 studies included in the systematic review, 29 examined the factors that influence teachers' intentions to use formative assessment processes in their classrooms. To analyze these factors, they were categorized into three main groups: (1) personal factors; (2) interactional factors; and (3) contextual factors.

▪ Personal factors

These factors are related to the individual characteristics of teachers. We identified the following ones:

- (i) Motivation, personal commitment, and enthusiasm for improving their teaching work and

the teaching-learning process are among the main factors that lead them to try to develop formative assessment practices (Abdulla-Alotaibi, 2018; Ahmedi, 2019; Andersson & Palm, 2018; Demir et al., 2018; Jawad, 2020; Krishnan et al., 2020; Kyaruzi et al., 2020; Lam, 2018; Namoco & Zaharundin, 2021).

- (ii) The perception of self-competence is fundamental for the use of formative assessment. The studies by Yan et al. (2022) and Saeed et al. (2018) show that teachers with higher perceived self-efficacy are more predisposed to use formative assessment in their classes. Seven studies in this review show that when teachers feel they lack the skill and ability for the correct implementation of alternative assessment practices, they are less willing to use them (Figa-Gurundu et al., 2020; Graham et al., 2021; Jawad, 2020; Khechane et al., 2020; Swaran-Singh et al., 2022; Yan, 2021; Zeng & Huang, 2022).
- (iii) Training received on and in assessment. Nine studies highlight the lack of training in assessment as a determining factor for the application of these processes (Andersson & Palm, 2018; Demir et al., 2018; Figa-Gurundu, et al., 2020; Govender, 2020; Jawad, 2020; Lam, 2018; Rahman et al., 2018; Swaran-Singh et al., 2022; Zang & Huang, 2021). This lack of training is primarily associated with: (a) absence of alternative assessment manuals (Figa-Gurundu et al., 2020); (b) lack of specific examples or practices (Demir et al., 2018; Yan, 2021); (c) insufficiency of tools and strategies that facilitate the implementation of formative assessment in the classroom (Demir et al., 2018); and (d) negative attitudes of teachers towards training in these processes (Figa-Gurundu et al., 2020).

▪ **Interaction with others**

Another aspect that stands out as a factor influencing teachers' intention to apply formative assessment processes is the lack of involvement and collaboration among teachers in the school context (Andersson & Palm, 2018; Boström & Palm, 2019; Lam, 2018; Mahalambi et al., 2022; Rahman et al., 2021; Sun-Keung-Pang, 2020; Veugen et al., 2022; Zeng & Huang, 2021). Actions such as exchanging experiences or collaborating with other teachers to plan assessment processes are facilitating factors that influence teachers' intention to apply these processes (Lam, 2018; Palm, 2018; Rahman et al., 2021).

On the other hand, student involvement in the development of these practices is also a conditioning factor (Figa-Gurundu, 2020; Johnson et al., 2019; Ng et al., 2020; Rahman et al., 2021; Swaran-Singh et al., 2022; Yan, 2021). These studies show a lack of student motivation to engage in self and peer assessment practices and a negative attitude towards formative assessment, which greatly hinders the implementation of these processes (Figa-Gurundu, 2020; Johnson et al., 2019).

▪ **Contextual facts**

These facts are related to the educational background. For analysis, they have been organized into three groups:

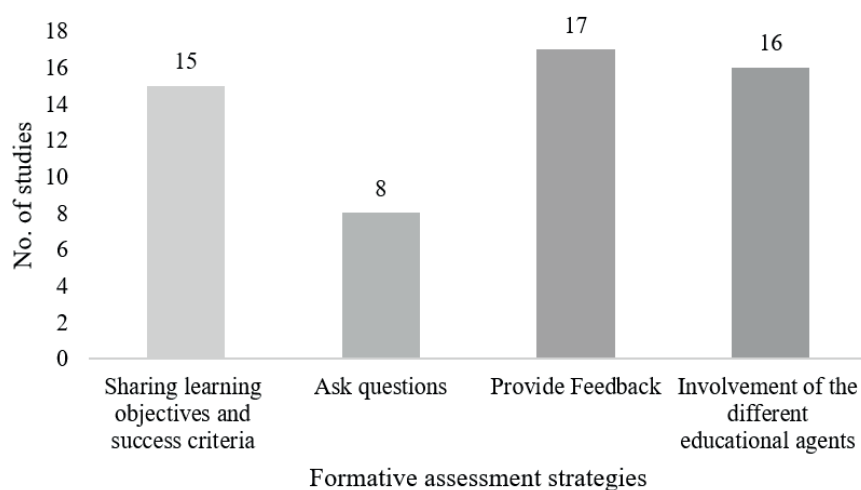
- (i) **External Policies:** Eighteen studies analyze their influence. The few synergies between administration and school make it difficult to use formative assessment processes (Boström & Palm, 2019; Govender, 2020; Graham et al., 2021; Kaur, 2021; Kechane et al., 2020). This is compounded by the demands of the curriculum, which leads teachers to spend a significant time in fulfilling it (Boström & Palm, 2019; Figa-Gurundu et al., 2020; Govender, 2020; Graham et al., 2021; Kaur, 2021) and the difficulty in incorporating appropriate assessments and activities into the classroom based on the content and learning

standards stipulated in the curriculum (Swaran-Singh et al., 2022). Another highlighted element is the importance given to national assessment tests in national education policies and, consequently, by schools, which leads teachers to prepare students for these standardized tests (Boström & Palm, 2019; Figa-Gurudu, 2020; Zeng & Huang, 2021). Finally, the need for marking or test-taking is also a factor that limits the implementation of alternative assessment practices (Dayal, 2021; Demir et al., 2018; Namoco and Zaharundin, 2021; Vaugen, 2021 & Yan et al., 2022).

- (ii) **School Policy:** Thirteen studies highlight this element as an influential factor. The lack of support from school authorities and management teams to promote formative assessment makes teachers feel limited to complying with what is set out in the school curriculum (Abdullah-Alotaibi, 2018; Figa-Gurudu et al., 2020; Govender, 2020; Khechane et al., 2020; Lam, 2018; Ma & Bui, 2021; Swaran-Singh et al., 2022; Zen & Huang, 2021). Another factor to consider is school schedules, since when they are too extensive, they do not allow teachers to spend time implementing formative assessment processes (Abdullah-Alotaibi, 2018; Figa-Gurudu et al., 2020; Govender, 2020; Khechane et al., 2020; Lam, 2018; Ma & Bui, 2021; Swaran-Singh et al., 2022; Williams-McBean, 2021; Yan, 2021; Zeng & Huang, 2021).
- (iii) **Working Conditions:** Covered in 17 studies. Of these, 16 highlight that teachers perceive the lack of time as the most conditioning factor (Andersson & Palm, 2018; Bernard et al., 2019; Boström & Palm, 2019; Demir et al., 2018; Figa-Gurudu et al., 2020; Govender, 2020; Jawad, 2020; Lam, 2018; Martin et al., 2022; Ng-Win et al., 2020; Rahman et al., 2021; Sin-Keung-Pam, 2020; Swaran-Singh et al., 2022; Yan et al., 2022; Zeng & Huang, 2021). Teachers attribute the shortage of time to the excessive workload linked to administrative and teaching tasks. These administrative tasks include being involved in too many intervention programs and the excessive demand of the administration to establish qualifications and satisfy the bureaucracy and external exams (Boström & Palm, 2019; Demir et al., 2018; Ma & Bui, 2021; Ng-Win, 2021; Rahman et al., 2021; Yan, 2021; Zen & Huang, 2021). Teaching tasks refer to actions such as attending to all students' needs, preparing classes, excessive ratios, and the heterogeneity of students in classrooms, which hinders the effective development of individualized formative assessment (Andersson & Palm, 2018; Demir et al., 2018; Figa-Gurudu et al., 2020; Martin et al., 2022; Rahman et al., 2021; Yan, 2021; Zeng & Huang, 2021).

What are the most common formative assessment strategies used in the classroom by teachers and how are they used?

Twenty-five studies were found that address the third research question, analyzing the most used formative assessment strategies in the school context. The studies analyzed these agree with the five key strategies proposed by Wiliam and Leahy (2015). For the analysis, they have been grouped into four strategies, combining student involvement in their own learning and that of their peers. Figure II shows the number of studies that analyze each of the included formative assessment strategies.

Figure II. Number of studies included for each of the formative assessment strategies analyzed.

Source: Compiled by the authors

Sharing learning objectives and success criteria with students

In fifteen of the analyzed studies, it is noted that learning intentions are made explicit and learning objectives and/or assessment criteria are shared with students to focus them on the aspects they should concentrate on in their learning. Some studies indicate that this should be done both, at the beginning and the end of the lesson (Bernard et al., 2019; Sun-Keung-Pang, 2020). One of the practices developed to share these elements with students involves breaking down the learning objectives into simpler terms so that they are understandable (Andersson & Palm, 2018; Dayal, 2021). These studies also emphasize the importance of discussing learning objectives with students, giving them autonomy at certain times to agree on what is intended to be achieved and involving them in the teaching and learning process (Andersson & Palm, 2018; Dayal, 2021; Dudeck et al., 2021; Sun-Keung-Pang, 2020). Other strategies used for this purpose include presenting the learning objectives in writing (Anderson & Palm, 2018) or sharing previous work from other students, providing exemplary models that help them reflect on the aspects they should focus on to adequately complete the tasks (Bernard et al., 2019; Veugen et al., 2021).

Encouraging class discussions, questions, and assignments that challenge students' learning

The formulation of questions to highlight student learning is present in eight of the analyzed studies (Bernard et al., 2019; Dubeck et al., 2021; Figa-Gurundu et al., 2020; Govender, 2020; Graham et al., 2021; Sun-Keung-Pang, 2020; Williams-McBean, 2021; Zeng & Huang, 2021). It is emphasized that these questions should be relevant, clear, open, and varied, aiming to motivate students to think, reflect, respond, and act accordingly (Bernard et al., 2019; Graham et al., 2021; Sun-Keung-Pang, 2020). Additionally, these questions should be appropriate to the students' level, allowing for the assessment of each student's understanding (Sun-Keung-Pang, 2020; Williams-McBean, 2022). For this strategy to be effective, studies highlight that the questions should be integrated into the teaching and learning process and formulated swiftly (Dubeck et al., 2019; Figa-Gurundu et al., 2020; Graham et al., 2021; Sun-Keung-Pang, 2020). One factor that can influence the appropriate use of this strategy is the teacher's experience, as shown in the study by Johnson et al. (2019), where more experienced teachers are able to use this strategy effectively.

Provide feedback

Among the strategies used in formative assessment processes, feedback is the one represented in the largest number of studies (n=17). Oral feedback is most frequently used in the studies to communicate to students what they have done well, indicate the mistakes made, and provide suggestions for further improvement (Boström & Palm, 2019; Figa-Gurundu et al., 2020; Khechane et al., 2020; Zeng & Huang, 2021). However, some studies include written feedback as a strategy when it refers to written assignments and tests or group work (Andersson & Palm, 2018; Zeng & Huang, 2021). Furthermore, it is shown that for feedback to be effective, suggestions for improvement should be proposed and not just the errors communicated (Andersson & Palm, 2018; Kaur, 2021). Finally, three studies indicate that feedback is not used correctly because there is insufficient time or resources to detect, understand, and help overcome each student's errors, leading teachers to focus corrections on highlighting the mistakes made and assigning a grade (Kaur, 2021; Khechane et al., 2020; Lam, 2018).

Involve students in their learning as well as in self-assessment and in peer assessment practices

The strategy of self-assessment and peer assessment is present in 16 studies. In 11 of the studies, these processes are applied through different ways (self-assessment, peer assessment) and in different tasks such as individual or group classwork, oral presentations, etc. (Bernard et al., 2019; Boström & Palm, 2019; Dayal, 2021; Dubeck et al., 2021; Grob et al., 2021; Khechane et al., 2020; Krishnan et al., 2020; Namoco & Zaharundin, 2021; Ng et al., 2020; Rahman et al., 2021; Sun-Keung-Pang, 2020). The use of self and peer assessment stands out as an excellent strategy for formative assessment, helping students take responsibility for their learning by identifying both, their own difficulties and those of their peers (Mahlambi, 2021; Zeng & Huang, 2021). This, in turn, promotes the development of the "learning to learn" competency and self-learning (Dudeck et al., 2021). To develop these practices, studies highlight various instruments and tools used by teachers (Bernard et al., 2019; Dudeck et al., 2021; Thaçi & Sopi, 2022; Williams-McBean, 2022; Yan, 2021) like student notebooks, portfolios, assessment rubrics, and debates being particularly prominent (Bernard et al., 2019; Dudeck et al., 2021; Thaçi & Sopi, 2022; Williams-McBean, 2022). Finally, Yan's study (2021) shows how training in these processes could increase the use of these skills.

Conclusion

Of the 36 studies included in this review, 19 contained information that allowed for answering the first research question, 29 for the second, and 25 for the third.

Regarding the first research question, it has been shown that teachers perceive the same benefits associated with formative assessment that other studies in recent decades have demonstrated (Azpilicueta-Amorín, 2020; Bilbao-Martínez & Villa-Sánchez, 2019). The regulatory and improvement character stands out among the main benefits perceived by teachers in relation to formative assessment (Boström & Palm, 2019; Dayal, 2021; Mahalambi et al., 2022; Thaçi & Sopi, 2022). This is a highly relevant point given that formative assessment is not generally associated with one-off summative assessments, but rather its value is recognized to improve learning and as a more integrated element in the teaching and learning process. Those studies that reflect the summative nature of assessment do so to indicate that it is still a useful means to collect evidence of student achievement, but also criticize that qualifications should be assigned to an assessment process that should seek to

improve learning only to satisfy bureaucratic aspects and to comply with external policies (Ma & Bui, 202; Ng 2021; Rahman et al., 2021).

The second research question has brought to light three types of factors (personal, interaction with others, and contextual) that influence teachers' intentions to use formative assessment strategies in the classroom and are consistent with those presented in previous systematic reviews on the subject studied (Heitink et al., 2016; Schildkamp et al., 2020; Yan et al., 2021). Among the personal factors, motivational aspects, the perception of competence, and the perception of how well-prepared they feel in these assessment processes stand out. This last element is recognized as one of the major factors influencing the use of formative assessment processes. This highlights the need for teacher literacy, both for those in training and those in active service, to provide them with tools to use these strategies and make them feel more competent in their use (Govender, 2020; Jawad, 2020; Saeed et al., 2018; Swaran-Singh et al., 2022). However, both the reality of initial and continuous training are far from achieving this goal as this is one of the elements that still receives less attention (Fraile et al., 2020). On the other hand, the certifying function traditionally associated with assessment processes, along with the existing social roots around grading, makes it difficult to involve and convince students of the benefits of formative assessment processes for their learning. A cultural change is needed that focuses on the importance of learning over marks as the only reference for the development of the teaching and learning process (Figa-Gurudu et al., 2020; Hasim et al., 2018; Ng et al., 2020; Rahman et al., 2021; Swaran-Singh et al., 2022; Yan, 2021). Finally, contextual factors have a significant impact on the use of formative assessment strategies. The disconnect between what the curriculum requires of teachers and the reality of classroom practice is one of the elements that hinder the use of these processes. The lack of teacher training on how to apply the curriculum, methodological aspects, and assessment can harm teachers' willingness to use these processes (Andersson & Palm, 2018; Demir et al., 2018; Figa-Gurudu et al., 2020; Govender, 2020; Jawad, 2020; Lam, 2018; Rahman et al., 2021; Swaran-Singh et al., 2022; Zeng and Huang, 2021). Similarly, it can affect teacher's feeling that their opinion is not considered in the drafting of laws and curriculum (MacDonald, 2022). Internally, educational centers, as reflected in this study, should establish appropriate conditions to facilitate teachers' work (Andersson & Palm, 2018; Jawad, 2020; Khechane et al., 2020), betting on educational improvement, promoting the use of formative assessment strategies, and creating workspaces so that teachers feel they have time to prepare the use of innovations in the classroom (Andersson & Palm, 2018; Figa-Gurudu et al., 2020; Khechane et al., 2020; Lam, 2018).

Finally, concerning the last research question, all formative assessment strategies used in the studies are consistent with the strategies of formative assessment processes collected in the literature (William & Leahy, 2015). The most frequently appearing strategy is providing feedback, followed by sharing the objectives and assessment criteria. This shows the impetus that research has given to the way formative assessment processes are understood and applied. However, its use in the classroom is still scarce (Fraile et al., 2020; Ramírez et al., 2018) and often with a one-time character (Hamodi et al., 2015; Ramírez et al., 2018). In turn, this relates to the obstacles encountered in applying formative assessment processes and the need to foster teacher training dynamics that allow for the practical and systematic development of formative assessment in classrooms. Therefore, and taking the results of this study as a reference, it is necessary to highlight the benefits of formative assessment processes and provide practical strategies for their use so that they are useful and do not pose an additional burden for teachers. On the other hand, solutions must be sought both from the centers and the administration to make the use of these processes more accessible.

This systematic review presents a novel study compared to previous reviews conducted, including not only the factors that condition the use of formative assessment processes but also the benefits reported by teachers in the research and the most used strategies in these studies. It also

specifically focuses on the Basic Education stage without including Higher Education or College Degree in the same review, whose approach and development are very different and condition the use of formative assessment processes differently. Furthermore, the large number of studies that are part of the systematic review allows for a clear vision of formative assessment processes concerning the three research questions posed. It also offers a vision of practical aspects of formative assessment that can be useful for management teams or administrators who wish to implement actions or educational policies in this area. However, it also presents some limitations, typical of studies developed under this methodology. Despite including many studies, it is possible that some may not have been included, either because they do not use the terms of assessment and research context used, employing some synonym that has not been considered; or, because the main focus of research does not respond to some of the questions posed, being only tangentially touched upon in the studies. Another aspect to consider is that, given its breadth, only literature in English has been included, leaving the door open for future research to address articles in Spanish that meet the rest of the inclusion criteria and have not been considered in this research. Additionally, it should be noted that the order in which the results are presented within each research question does not indicate the priority or importance of each topic discussed concerning the rest, but is the order chosen by the authors to present the results.

Future research should focus on developing interventions in centres and classrooms to enhance the use of these processes and the strategies proposed. This would allow for valuing the possible benefits derived from their use. This is essential for teachers to perceive that it is possible to bring these processes into practice, reducing the gap between what research identifies as beneficial and what is applicable in classrooms. Undoubtedly, among the challenges of educational research in the field of formative assessment is to analyze and systematize effective and successful formative assessment practices that serve as examples for teachers and contribute to the development of quality and impactful formative assessment.

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Article No.	Title	Author and year of publication	Country/region	Education grade	Area/subject	Methodology	No. of participants
Nº 1	Teachers' perception of factors influences adoption of formative assessment	Abdullah-Alotaibi, K. (2018)	Rivadh	SE	Different subjects	Mixed Qualitative (interview) Quantitative (questionnaire)	210 teachers 25 teachers (interview)
Nº 2	Teachers' attitudes and practices towards formative assessment in primary schools	Ahmedi, V. (2019)	Kosovo	PE	Different subjects	Qualitative (open questionnaire)	47 teachers
Nº 3	Reasons for teachers' successful development of a formative assessment practice through professional development-a motivation perspective	Andersson, C. & Palm, T. (2018)	Sweden	PE	Math	Qualitative (teacher questionnaire and interview and observation)	22 teachers
Nº 4	Integration of inquiry-based instruction with formative assessment: The case of experiences chemistry teachers	Bernard, P., Dudek-Rózycki, K. & Orwat, K. (2019)		SE	Chemistry	Qualitative (interview)	2 teachers
Nº 5	Teachers' formative assessment practices: changes after a professional-development programme, and important conditions for change	Boström, E. & Palm, T. (2019)	Sweden	SE	Math	Mixed Qualitative (observation and interview) Quantitative (questionnaire)	14 teachers
Nº 6	How teachers use formative assessment strategies during teaching: evidence from classroom	Dayal, C.H (2021)	Australia	SE	Math	Qualitative/Case study (interview)	2 teachers
Nº 7	Comparative investigation of alternative assessment methods used in Turkey and United States elementary 4 th grade mathematics curriculum	Demir, M., Tananis, C.A. & Basbogaoglu, U. (2018)	Turkey and USA	4 th PE	Math	Qualitative (observation and interview)	24 teachers
Nº 8	Unlocking the potential of STEAM education: How exemplary teachers navigate assessment challenges	Dubeck, M., DeLuce, C. & Rickey, N. (2021).	Canada	SE	STEAM	Qualitative (interview)	14 teachers
Nº 9	The practice of formative assessment in Ethiopian Secondary School curriculum implementation: The case ow west Arsi Zone Secondary schools	Figa-Guduru, J., Tarekegne-Melese, W. & Abebe-Kebede, M. (2020)	Ethiopia	SE	Different subjects	Mixed Qualitative (observation and interview) Quantitative (questionnaire)	176 teachers 258 students 8 school principals 6 teachers (interview) 4 educative supervisors
Nº 10	Insights into Grade 2 teacher's enactment of formative assessment in mathematics in selected priority schools in Gauteng	Govender, P. (2020)	South Africa	PE	Math	Qualitative, case study (interview and observation)	2 teachers
Nº 11	Communicating lesson objectives and effective questioning in the mathematics classrooms: The Ghanaian Junior High school experience	Graham, M.A., Staden, S.V. & Dzamesi, P.D. (2021)	Ghana	SE	Math	Qualitative/ Intervention (interview)	9 teachers
Nº 12	Analyzing formal formative assessment activities in the context of inquiry at primary and upper secondary school in Switzerland	Grob, R., Holmeier, M. & Labudde, P. (2021)	Sweden	PE and SE	Chemistry	Mixed Quantitative (questionnaire) and Qualitative (interview)	20 teachers (9 PE and 11 SE)
Nº 13	Eliciting teachers understanding and their reported practices on school-based formative assessment: Methodological challenges	Hasim, Z., Di, S. & Barnard, R. (2018)	Malasyia	Pe	English	Qualitative/Case study (interview)	6 docentes
Nº 14	Examinations of Iraqi EFL teachers' attitudes, intentions, and practices regarding formative assessment	Jawad, A.H. (2020)	Iraq	Since PE for University	English	Quantitative (questionnaire)	102 teachers
Nº 15	A study of implementation of formative assessment in three large urban districts	Johnson, C.C., Sondergeld, T.A. & Walton, J.B. (2019)	USA	PE and SE	Different subjects	Mixed Qualitative (observation) Quantitative (questionnaire)	1st Part:28 teachers 2nd Part:1097 teachers
Nº 16	Formative assessment in English language teaching: exploring the enactment practices of teachers within three primary schools in Singapore	Kaur, K. (2021)	Singapore	PE (1st and 2nd)	English	Qualitative/Case study (observation and interview)	6 teachers
Nº 17	Primary Mathematics Teachers assessment practices in the context of the integrated primary curriculum in Lesotho	Khechane, N.C., Makara, M.C. & Rambuda, A.M. (2020)	Lesotho	PE	Math	Qualitative/case study (observation and interview)	4 teachers
Nº 18	The power of context: exploring teacher's formative assessment for online collaborative writing	Krishnan, J., Black, R. & Olson, C.B. (2020)	USA	8 ^o SE	English	Qualitative/ Case studies (interview and observation)	2 teachers
Nº 19	Teacher AFL perceptions and feedback practices in mathematics education among secondary schools in Tanzania	Kyaruzi, F., Stribos, J-W., Ufer, S., & Brown, G. T. L. (2018)	Tanzania	SE	Math	Mixed Quantitative (questionnaire) Qualitative (interview)	54 teachers
Nº 20	Teacher assessment literacy: Surveying knowledge, conceptions and practices of classroom-based writing assessment in Hong Kong	Lam, R. (2018)	Hong Kong	SE	English	Mixed Qualitative (interview and observation) Quantitative (questionnaire)	66 teachers
Nº 21	Chinese secondary school teachers' conceptions of L2 assessment: a mixed-methods study	Ma, M. & Bui, G. (2021)	China	SE	English	Mixed Quantitative (questionnaire) Case study/qualitative (interview)	66 teachers 2 teachers (interview)

Nº 22	Assessment for learning as a driver for active learning and learner participation in mathematics	Mahlambi, S. B. (2021)	Johannesburg	PE	Math	Qualitative (interview and observation)	9 teachers
Nº 23	Exploring the use of assessment for learning in the mathematics classrooms	Mahalambi, S.B., Van den Berg, G. & Mawela, A.S. (2022)	South Africa	6 th PE	Math	Case study (interview and observation)	9 teachers
Nº 24	Examining Elementary school teachers' perceptions of and use of formative assessment in mathematics	Matin, C.L, Mraz, M. & Polly, D. (2022)	USA	PE	Math	Quantitative (questionnaire)	62 teachers
Nº 25	Pedagogical Beliefs and learning assessment in science: teachers experiences anchored on theory of reasons actions	Namoco, S. & Zaharundin, R. (2021)	Philippines	SE	Different subjects	Qualitative (interview)	6 teachers
Nº 26	Enhancing Student Learning and Teacher Development: Does "assessment for learning" matter?	Ng, S. W., Kwan, Y. W., & Huey Lei, K. H. (2020)	Hong Kong		English	Qualitative/Case study (intervention)	4 teachers
Nº 27	Implementing a formative assessment model at a secondary school: attitudes and challenges	Rahman, K.A., Hasan, M.K., Namaziandost, E. & Sraj,P.M.I. (2021)	Bangladesh	SE	English	Qualitative (interview)	12 teachers
Nº 28	Teachers' perception about the use of classroom assessment techniques in elementary and secondary schools	Saeed, M., Hafsa,T. & Iqra, L. (2018)	Lahore	PE and SE	Different subjects	Quantitative (questionnaire)	330 teachers
Nº 29	Teachers' reflective practices in implementing assessment for learning skills in classroom teachers	Sun-Keung-Pang, N. (2020)	Hong Kong	PE	Different subjects	Cuantitativa (cuestionario)	34 teachers
Nº 30	Challenges and needs of ESL teachers in implementing portfolio assessment as alternative assessment in teaching English	Swaran-Singh, C.K, Mastura-Muhammad, M.M., Mostafa,A.N., Noordin,N., Darmi, R., Yunus, M.M., Kiong, T.T. & Singht, T.S.M. (2022)	Malaysia		English	Qualitative (observation and interview)	5 teachers
Nº 31	The differences in formative assessment evaluation between teachers and students-a non-parametric analysis	Thaçi,L. & Sopi, X. (2022)	Kosovo	SE	Different subjects	Quantitative (questionnaire)	217 teachers
Nº 32	Secondary school teachers use of online formative assessment during COVID 19 lockdown: experiences and lesson learned	Veugen, M.J., Gulikers, J.T.M. & Brok, P. (2022)	Netherlands	SE	Different subjects	Quantitative (questionnaire)	50 teachers
Nº 33	Contextual Considerations: Revision of the William and Thompson (2007) Formative assessment framework in the Jamaican context	Williams-McBean, C.T. (2021)	Tanzania	SE	English	Qualitative (interview and observation)	32 teachers
Nº 34	Assessment-as-learning in classroom: the challenges and professional development	Yan, Z. (2021)	Hong Kong	PE	Different subjects	Qualitative (observation and interview)	47 teachers
Nº 35	Predicting Teachers Formative Assessment Practices: Teacher Personal and Contextual Factors	Yan, Z., Chiu, M.M. & Cheng, E.C. (2022)	Hong Kong	PE and SE	Different subjects	Quantitative (questionnaire)	296 teachers
Nº 36	Understanding formative assessment practice in the EFL exam-oriented context: An application of the theory of planned behavior	Zeng, J. & Huang, L. (2021)	China	SE	English	Mixed Qualitative (interview) Quantitative (questionnaire)	Interview: 10 teachers Questionnaire: 171 teachers

Source: Compiled by the authors

